



(19)

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(11) Publication number:

Generated Document.

PATENT ABSTRACTS OF JAPAN

(21) Application number: 63073398

(51) Intl. Cl.: H01L 21/20 H01L 21/205

(22) Application date: 29.03.88

(30) Priority:

(43) Date of application
publication: 02.10.89(84) Designated contracting
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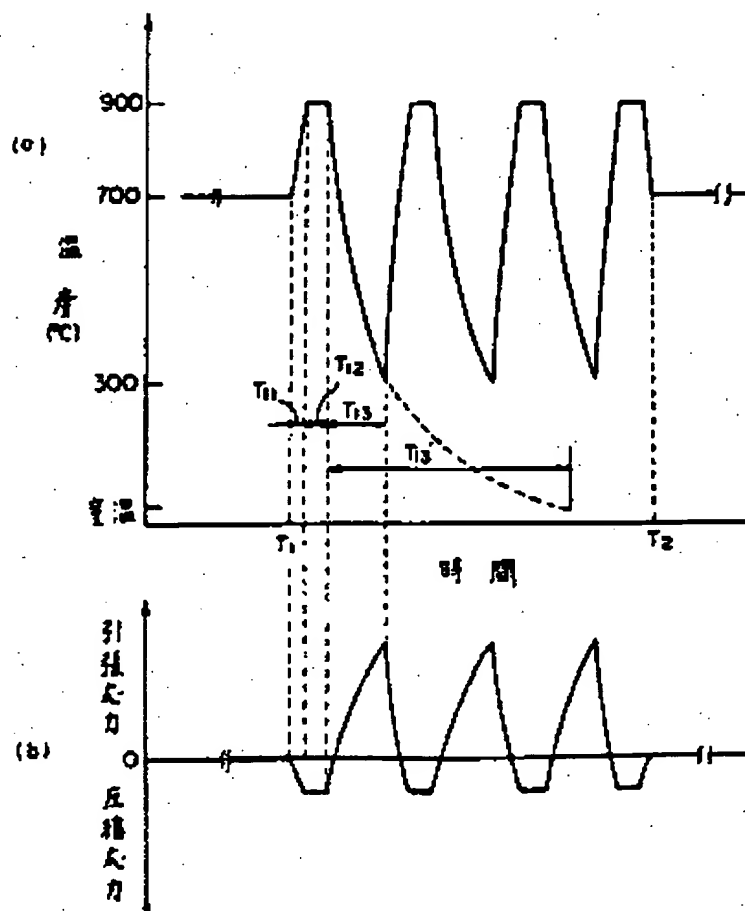
(74) Representative:

(54) HEAT TREATMENT
METHOD

(57) Abstract:

PURPOSE: To effectively accomplish the decrease in dislocation of a defect in a short period by a method wherein the epitaxially grown layer of a III-V compound semiconductor is formed on an Si substrate, and a heat treatment process at a specific temperature and for a specific period is repeated at least once.

CONSTITUTION: A GaAs layer is epitaxially grown on an Si substrate by conducting an organic metal vapor-growth method at about 700°C for the time T1=45minutes. The film thickness of the above-mentioned layer is set at 1.5μm for improvement of crystallizability by heat treatment. Then, temperature is raised to 900°C in the period of time T11=3minutes, said temperature is maintained for T11=5minutes, and the cooled down to 300°C in T13=12minutes. T13=50minutes are required using



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JP1246818A2: HEAT TREATMENT METHOD

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Issued/Filed Dates: Oct. 2, 1989 / March 29, 1988

Application Number: JP1988000073398

IPC Class: H01L 21/20; H01L 21/205; H01L 21/324;

Abstract: **Purpose:** To effectively accomplish the decrease in dislocation of a defect in a short period by a method wherein the epitaxially grown layer of a III-V compound semiconductor is formed on an Si substrate, and a heat treatment process at a specific temperature and for a specific period is repeated at least once.

Constitution: A GaAs layer is epitaxially grown on an Si substrate by conducting an organic metal vapor-growth method at about 700°C for the time T1=45minutes. The film thickness of the above-mentioned layer is set at 1.5µm for improvement of crystallizability by heat treatment. Then, temperature is raised to 900°C in the period of time T11=3minutes, said temperature is maintained for T11=5minutes, and the cooled down to 300°C in T13=12minutes. T13=50minutes are required using the method heretofore in use, and the cooling period of time is sharply reduced. The above-mentioned cycle is repeated four times, and the heat treatment for decreasing crystal dislocation is completed. Besides, a GaAs device layer of 1.5µm in thickness is epitaxially grown in the period of time T3=45minutes, and an excellent thin film crystal of 3µm in total thickness is obtained.

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Other Abstract Info: DERABS C89-329813 DERC89-329813

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